

REMARKS

This amendment is responsive to the Office Action dated December 5, 2008. In the amendment, claims 1, 11, and 29 have been amended. Claims 48-56 have been added. These amendments add no new matter. Support for these amendments may be found variously throughout the Specification. For example, support includes but is not necessarily limited to page 16, line 32 - page 18, line 26 Specification. Claims 1-56 remain pending in the application. Reconsideration and allowance of the pending claims are respectfully requested.

Claims 1, 2, 5, 11-12, 15-18, 21-22, 29-30, 33-36, and 39-40 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,811,927 to Anderson et al. (“Anderson”) in view of U.S. Pat. No. 6,884,138 to Ando et al. (“Ando”). This rejection is traversed.

Claim 1 now recites: *[a] flat-type display comprising:*
a first panel and a second panel which are bonded to each other in their circumferential portions and having a space between the first panel and the second panel, the space being in a vacuum state, in which
a spacer is disposed between a first panel effective field and a second panel effective field that work as a display portion;
wherein the spacer is fixed to the first panel effective field and/or the second panel effective field with a first low-melting-point metal material layer,
wherein a first surface of the spacer is electrically connected to the first panel through a first electrically conductive material layer and the first low-melting-point metal material layer, the first electrically conductive material layer being between the first surface of the spacer and the first low-melting-point metal material layer,
wherein a second surface of the spacer is electrically connected to second electrically conductive layer formed on the second panel through a second low-melting-point metal material layer and a second electrically conductive material layer, the second electrically conductive material layer being between the second surface of the spacer and the second low-melting-point metal material layer,

wherein the melting point of the low-melting-point metal material constituting the first low-melting-point metal material layer is 120°C to 400°C.

These claimed features are neither disclosed nor suggested by Anderson or Ando, alone or in any permissible combination.

Anderson discloses “a method for providing spacers in a flat panel display” and “a method for using metal-to-metal bonding to affix spaces to a display plate of a flat panel display.” (Anderson, col. 1, lines 5-9.)

Anderson discloses that the edge 106 of the spacer 102 is coated with a suitable metal to provide a bonding layer 108. (Anderson, col. 3, lines 59-61.) Then, metallic compliant members 112 are affixed to the bonding layer 108 via metal-to-metal bonds. (Anderson, col. 4, lines 22-24.)

“Regions 126 are available for making physical contact with spacers so that a predetermined spacing can be maintained between anode 120 and cathode display plate[.]” (Anderson, col. 5, lines 33-35.) Metallic bonding pads 132 are deposited on the regions 126 between the rows of pixels. (Anderson, col. 6, lines 6-8.) The metallic compliant members are then affixed to portions of the metallic bonding pads, thereby affixing spacers 102 to modified anode 130 in a perpendicular orientation. (Anderson, col. 6, lines 48-52.)

Further, Anderson discloses that the field emission display may further include “a plurality of metallic bonding pads 168, which are formed on cathode 164, and a plurality of metallic compliant members 169, which are affixed to the metallic bonding pads 168 in a manner similar to the bonding between metallic compliant members 112 and metallic bonding pads 132.” (Anderson, col. 9, lines 23-28.)

Anderson specifies that the metallic bonding pads 132 include strips of aluminum. (Anderson, col. 6, lines 6-8.) Further, Anderson discloses that the metallic compliant members 112 are made of pure gold or a gold/palladium alloy. (Anderson, col. 4, lines 47-52.) Anderson also discloses that an adhesion layer which is formed on the edge of member 104 includes a suitable metal such as titanium. (Anderson, col. 5, lines 13-18.)

Anderson clearly fails to disclose or suggest “*wherein the spacer is fixed to the first panel*

effective field and/or the second panel effective field with a first low-melting-point metal material layer,...

wherein the melting point of the low-melting-point metal material constituting the first low-melting-point metal material layer is 120 °C to 400 °C.”

For ease of understanding, and in no way to be construed as limiting the claims, the Specification gives examples of possible low-melting-point metal materials constituting the first low-melting-point metal material layer including:

In (indium; melting point 157 °C); an indium-gold low-melting-point alloy; tin (Sn)-containing high-temperature solders such as Sn₈₀Ag₂₀ (melting point 220 to 370 °C) and Sn₉₅Cu₅ (melting point 227 to 370 °C); tin (Sn)-containing solders such as Sn₆₀Zn₄₀ (melting point 200 to 250 °C); lead (Pb)-containing high-temperature solders such as Pb_{97.5}Ag_{2.5} (melting point 304 °C), Pb_{94.5}Ag_{5.5} (melting point 304 to 365 °C) and Pb_{97.5}Ag_{1.5}Sn_{1.0} (melting point 309 °C); zinc (Zn)-containing high-temperature solders such as Zn₉₅Al₅ (melting point 380 °C); tin-lead-containing standard solders such as Sn₅Pb₉₅ (melting point 300 to 314 °C) and Sn₂Pb₉₈ (melting point 316 to 322 °C); and brazing materials such as Au₈₈Ga₁₂ (melting point 381 °C) (all of the above parenthesized values show atomic %). (Clean Specification, pg. 16, line 35 - pg. 17, line 22.)

Ando fails to cure the deficiencies of Anderson. Ando discloses a method for manufacturing a spacer for use in an electron source apparatus. (Ando, col. 1, lines 9-12.) Ando discloses a spacer 1020 placed between the inner side of a face plate 1017 and the inner side of a rear plate 1015. (Ando, FIG. 8, col. 11, line 56 - col. 12, line 18.) The spacer 1020 is a member having a high resistance film 11 formed on the surface of the spacer substrate. (Ando, col. 11, lines 59-61.) A conductive film 206 is formed on the contact surface of the spacer facing the inner side of the face plate 1017. (Ando, col. 11, lines 61-63.) A conductive film 206 formed on the contract surface of the spacer facing the inner side of the rear plate 1015. (Ando, FIG. 8.)

Ando also discloses the conductive film 206 contains a conductive substance selected from SnO₂, ZnO, In₂O₃, and Ag. (Ando, col. 5, lines 16-21; col. 16, lines 12-14.) Anderson further discloses that the conductive film 206 may be a metal carboxylate such as Sn carboxylate dispersed in the binder (acrylic resin). (Ando, col. 5, lines 22-23; col. 10, lines 12-14.)

However, Ando, like Anderson, clearly fails to disclose or suggest “*wherein the spacer is*

fixed to the first panel effective field and/or the second panel effective field with a first low-melting-point metal material layer,...

wherein the melting point of the low-melting-point metal material constituting the first low-melting-point metal material layer is 120°C to 400°C.”

Because even the combination of Anderson and Ando fails to yield the features recited in claim 1, a *prima facie* case of obviousness cannot be sustained for these claims. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.); *see also* MPEP 2143.03; *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) (If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious.).

Additionally, claims 2 and 5, which depend from claim 1, are neither disclosed nor suggested by a combination of Anderson and Ando for the reasons noted above.

For reasons similar to those given above, the combination of Anderson and Ando fails to yield the features recited in independent claims 11 and 29, and claims 12, 15-18, 21-22 and 30, 33-36, 39-40, which depend from claims 11 and 29, respectively.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1, 2, 5, 11-12, 15-18, 21-22, 29-30, 33-36, and 39-40 under 35 U.S.C. § 103(a) as being unpatentable over Anderson in view of Ando.

Claims 3, 13, 19, 31, and 37 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,811,927 to Anderson et al. (“Anderson”) in view of U.S. Pat. No. 6,884,138 to Ando et al. (“Ando”) and further in view of U.S. Pub. No. 2002/0079802 to Inoue et al. (“Inoue”). This rejection is traversed.

Claim 3 depends from claim 1, claim 13 and 19 depend from claim 11 either directly or indirectly, and claims 31 and 37 depend from claim 29, either directly or indirectly. Accordingly claims 3, 13, 19, 31, and 37 incorporate the features of claims 1, 11, and 29, respectively.

As noted above, Anderson and Ando do not disclose or suggest these features. Inoue does not remedy the deficiencies of Anderson and Ando.

Inoue discloses an electron-emitting device and a cold cathode field emission device. (Inoue, para. [0001].) Inoue provides “an electron-emitting device and a cold cathode field emission device that permit electron emission in a far lower electric field, make it possible to decrease the temperature to be employed for forming an electron emitting portion and have the electron emitting portion made of carbon and reliably formed in a desired portion of the electrically conductive layer or a cathode electrode[.]” (Inoue, para. [0028].)

Inoue is relied upon for disclosing “bonding [of] the first and second panel in their circumferential portions through a bonding layer made of frit glass[.]” (Office Action, pg. 5, lines 5-7.) However, Inoue, like Anderson and Ando, fails to disclose or suggest “*wherein the spacer is fixed to the first panel effective field and/or the second panel effective field with a first low-melting-point metal material layer,...*

wherein the melting point of the low-melting-point metal material constituting the first low-melting-point metal material layer is 120 °C to 400 °C.”

Dependent claim 3, which depends from independent claim 1, is distinct for its incorporation of the features recited in independent claim 1, as well as for its own, separately recited patentably distinct features. These features are not disclosed or suggested by any permissible combination of Anderson, Ando, and Inoue.

For reasons similar to those described above, the features of dependent claims 13 and 19, and 31 and 37, which depend from independent claims 11 and 29, respectively, are also neither disclosed or suggested by any permissible combination of Anderson and Ando in view of Inoue.

Because Anderson, Ando, and Inoue, either alone or in any permissible combination fail to teach, disclose, or suggest all the features recited in dependent claim 3, 13, 19, 31, and 37, Applicant respectfully requests reconsideration and withdrawal of the rejection of these claims under 35 U.S.C. § 103(a) as being unpatentable over the combination of Anderson, Ando, and Inoue. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.); *see also* MPEP 2143.03.

Claims 6-7, 9-10, 23-24, 26-28, 41-42, and 44-46 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,811,927 to Anderson et al. (“Anderson”) in view of U.S. Pat. No. 6,884,138 to Ando et al. (“Ando”) and further in view of U.S. Pub. No. 2002/0096992 to Hsiao et al. (“Hsiao”). This rejection is traversed.

Claims 6-7 and 9-10 depend from claim 1, claims 23-24 and 26-28 depend from claim 11, and claims 41-42 and 44-46 depend from claim 29. Accordingly, claims 6-7, 9-10, 23-24, 26-28, 41-42, and 44-46 incorporate the features of claims 1, 11, and 29, respectively.

As noted above, Anderson and Ando do not disclose or suggest these features. Hsiao does not remedy the deficiencies of Anderson and Ando.

Hsiao discloses a structure for the packaging technique of a large size field emission display wherein the spacer is fixed on the upper plate through an anodic assembling technique. (Hsiao, para. [0001].) However, Hsiao does not remedy the deficiencies of Anderson.

Because even the combination of Anderson, Ando, and Hsiao fail to yield Applicant’s claimed invention, it is submitted that a *prima facie* case of obviousness cannot be maintained regarding claims 6-7 and 9-10. Similarly, a *prima facie* case of obviousness cannot be maintained regarding claims 23-24, and 26-28, and 41-42 and 44-46.

Because Anderson, Ando, and Hsiao, either alone or in any permissible combination fail to teach, disclose, or suggest all the features recited in dependent claims 6-7 and 9-10, 23-24, 26-28, 41-42, and 44-46, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 6-7 and 9-10, 23-24, 26-28, 41-42, and 44-46 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Anderson and Ando in view of Hsiao.

Claims 8, 25, and 43 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,811,927 to Anderson et al. (“Anderson”) and U.S. Pat. No. 6,884,138 to Ando et al. (“Ando”) in view of U.S. Pub. No. 2002/0096992 to Hsiao et al. (“Hsiao”) and further in view of U.S. Pub. No. 2002/0079802 to Inoue et al. (“Inoue”). This rejection is traversed.

Claim 8 depends from claim 1 and thus incorporates the features recited therein. As noted above, Anderson, Ando, Hsiao, and Inoue, alone or in any combination, fail to disclose or suggest the features of claim 1.

Accordingly, the combination of Anderson, Ando, Hsiao, and Inoei would still fail to yield the features recited in claim 1. Claim 8 is also neither disclosed nor suggested by these references because it incorporates the features of claim 1 as well as its own separately recited patentably distinct features.

For similar reasons, the features of claims 25 and 43, which depend from independent claims 11 and 29, respectively, are also neither disclosed nor suggested by any combination of Anderson, Ando, Hsiao, and Inoue because of their incorporation of the features recited in claims 11 and 29 as well as their own separately recited patentably distinct features.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 8, 25, and 43 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Anderson and Ando in view of Hsiao and further in view of Inoue.

Claim 47 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,811,927 to Anderson et al. (“Anderson”) and U.S. Pat. No. 6,884,138 to Ando et al. (“Ando”) in view of U.S. Pub. No. 2003/0190072 to Toyota et al. (“Toyota”). This rejection is traversed at least for the following reasons.

Toyota has a filing date of March 27, 2003. However, the above-identified application is entitled to benefit of the filing date for Japanese Patent Application No. 2002-324158 of November 7, 2002, which is earlier than the filing date of the Toyota reference.

Thus, the Toyota appears to be unavailable as prior art and the rejection of the claim 47 using this reference should be withdrawn as a result.

Additionally, *Sony Corporation* is the real party in interest of Toyota. An assignment of all rights in Toyota to *Sony Corporation* was executed by the inventor and recorded by the U.S. Patent and Trademark Office at Reel 013909, Frame 0744.

Sony Corporation is also the real party in interest of the present application. An assignment of all rights in the present application to *Sony Corporation* was executed by the inventor and recorded by the U.S. Patent and Trademark Office at Reel 017293, Frame 0248.

Accordingly, the present application and Toyota were, at the time the invention of the present application was made, commonly owned by Sony Corporation of Tokyo, Japan. But pursuant to 35 U.S.C. §103(c) and M.P.E.P §706.02(l)(1), Toyota is disqualified as prior art for the purpose of a rejection under 35 U.S.C. §103.

Withdrawal of this rejection and allowance of claim 47 is respectfully requested.

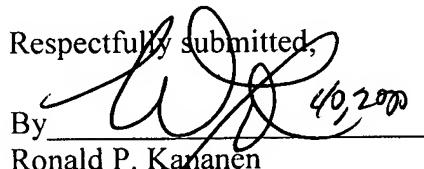
CONCLUSION

In view of the foregoing arguments, all claims are believed to be in condition for allowance. If any further issues remain, the Examiner is invited to telephone the undersigned to resolve them.

This response is believed to be a complete response to the Office Action. However, Applicant reserve the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicant expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 C.F.R. § 1.104(d)(2) and MPEP § 2144.03.

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